WHAT IS CLAIMED IS:

1. A method of producing a plurality of synchronized encoded representations of an input media signal comprising:

providing an input media signal;

encoding said input media signal to generate a plurality of encoded representations, wherein each representation is encoded according to a different set of encoding parameters; and

identifying a number of synchronization points in each of said encoded representations.

2. The method of claim 1, wherein said synchronization points facilitate a switching from a streaming of one of said encoded representations to another of said encoded representations with no substantial discontinuity occurring during said switching.

3. The method of claim 2, wherein each of said encoded representations can be decoded starting at said synchronization points.

4. The method of claim 3, wherein a temporal period between any two synchronization points in an encoded representation does not exceed a specified maximum temporal period.

5. The method of claim 4, wherein each synchronization point has a substantially similar temporal location in each encoded representation.

6. The method of claim 5, wherein said input media signal comprises a video input sequence, wherein said video input sequence comprises frames of digital video, and wherein said synchronization points comprise encoded frames of digital video.

7. The method of claim 6 further comprising:

identifying a frame in said input sequence;

encoding said identified frame to produce an encoded frame of a first encoded representation, wherein a decoding of said encoded frame of said first encoded representation does not require a decoded version of another frame;

identifying said encoded frame of said first encoded representation as a synchronization point;

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encoding said identified frame to produce an encoded frame of a second

encoded representation, wherein a decoding of said encoded frame of said

second encoded representation does not require a decoded version of another

frame; and

5   identifying said encoded frame of said second encoded representation as

a synchronization point.

8.   The method of claim 7, wherein at least a portion of each of said encoded

representations is generated before any encoded representation is completely generated.

9.   A computer readable medium having stored thereon a plurality of

10   instructions which, when executed by a processor in a computer system, cause the

processor to perform the steps of:

accepting an input media signal;

encoding said input media signal to generate a plurality of encoded

representations, wherein each encoded representation is encoded according to a

15   different set of encoding parameters; and

identifying a number of synchronization points in each of said encoded

representations.

10. A system for producing a plurality of encoded representations of a video

input sequence comprising:

20   a video encoder configured to generate said plurality of encoded

representations of said video input sequence, wherein said video encoder

encodes each representation according to a different set of encoding parameters

and wherein each encoded representation contains synchronization frames; and

an output module configured to output said encoded representations.

25   11. The system of claim 10, wherein said synchronization frames facilitate a

switching from a streaming of one of said encoded representations to another of said

encoded representations with no substantial discontinuity occurring during said

switching.

12. The system of claim 11, further comprising:

30   a storage device configured to store said encoded representations.

13. The system of claim 11, further comprising:

a server, configured to transmit at least one of said encoded representations over a communications network for a real-time presentation, said server responsive to a transition signal to switch from transmitting one of said encoded representations to transmitting another of said encoded representations to a client without a substantial interruption in said real-time presentation.

14. The system of claim 11, further comprising:

a decoder configured to decode a frame preceding a first synchronization frame in one of said encoded representations, then to decode a second synchronization frame in another of said encoded representations, said second synchronization frame having substantially the same temporal location as said first synchronization frame.

15. A video encoding system comprising:

a host computer;

a digital video input sequence;

an output stream comprising a plurality of encoded representations of said digital video input sequence, wherein each representation is encoded according to a different set of encoding parameters, wherein each encoded representation contains synchronization frames, and wherein said synchronization frames facilitate a switching from a streaming of one of said encoded representations to a streaming of another of said encoded representations with no substantial discontinuity occurring during said switch; and

a video encoding application operating on said host computer, wherein said video encoding application generates said output stream from said digital video input sequence.

16. The system of claim 15, wherein said video encoding application is configured to generate a set of data from said digital video input sequence, said video encoding application using said set of data to generate said plurality of encoded representations of said digital video input sequence.

17. The system of claim 16, further comprising:

a storage device used to store said encoded representations.

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18. The system of claim 16, further comprising:

a server, configured to transmit at least one of said encoded representations over a communications network for a real-time presentation, said server responsive to a transition signal to switch from transmitting one of said encoded representations to transmitting another of said encoded representations to a client without a substantial interruption in said real-time presentation.

19. The system of claim 16, further comprising:

a decoder configured to decode a frame preceding a first synchronization frame in one of said encoded representations, then to decode a second synchronization frame in another of said encoded representations, said second synchronization frame having substantially the same temporal location as said first synchronization frame.

20. A data file containing a plurality of encoded representations of a video sequence comprising:

a first of said encoded representations having a first set of synchronization points; and

a second of said encoded representations having a second set of synchronization points, wherein each of said second set of synchronization points has a temporal location within said second encoded representation that corresponds substantially to a temporal location within said first encoded representation of one of said first set of synchronization points.

21. The data file of claim 20, wherein said encoded representations comprise segments, and wherein said segments of said encoded representations are interleaved in said data file.

22. The data file of claim 20, wherein said encoded representations exist in contiguous blocks within said data file.

23. The data file of claim 22, further comprising:

synchronization information, said synchronization information comprising locations of synchronization points within said data file.

24. A method of producing a plurality of encoded representations of an input media signal comprising:

providing an input media signal;

generating a set of data from said input media signal; and

using said set of data to generate a plurality of encoded representations of said input media signal, wherein each encoded representation is encoded according to a different set of encoding parameters.

25. The method of claim 24, wherein each of said encoded representations is a complete and separate representation of said input media signal.

26. The method of claim 24, wherein any one encoded representation can be decoded without reference to another encoded representation.

27. The method of claim 24, wherein said set of data comprises intermediate encoding data.

28. The method of claim 27, wherein said input media signal is a video input sequence comprising frames of digitized video.

29. The method of claim 28, wherein said set of data comprises transform data.

30. The method of claim 28, wherein said set of data comprises discrete cosine transform data.

31. The method of claim 28, wherein said set of data comprises motion vector data.

32. The method of claim 28, wherein said set of data comprises color converted frame data.

33. The method of claim 28, wherein said set of data comprises resampled frame data.

34. A computer readable medium having stored thereon a plurality of instructions which, when executed by a processor in a computer system, cause the processor to perform the steps of:

accepting an input media signal;

generating a set of data from said input media signal; and

using said set of data to generate a plurality of encoded representations of said input media signal, wherein each encoded representation is encoded according to a different set of encoding parameters.

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35. A system for producing a plurality of encoded representations of a video input sequence comprising:

a video encoder configured to generate a set of intermediate encoding data from said video input sequence, said video encoder using said set of intermediate encoding data to generate said plurality of encoded representations of said video input sequence, wherein each encoded representation is encoded according to a different set of encoding parameters; and

an output module configured to output said encoded representations.

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